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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/741,597	11/01/96	WIESMAN R	FM-147J

LM02/1110

IANDIORIO & TESKA
260 BEAR HILL ROAD
WALTHAM MA 02154

EXAMINER	
GOINS,D	
ART UNIT	**PAPER NUMBER**
2736	11

DATE MAILED: 11/10/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/741,597	Richard M. Wiesman
Examiner	**Group Art Unit**
Davetta W. Goins	2736

☒ Responsive to communication(s) filed on *Jun 28, 1999*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *38-67* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *38-67* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 38-56, and 58-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abraham in view of Libove et al. (US Pat. 5,559,377 and US Pat. 5,473,244)

In reference to claim 38, Abraham discloses 1)the claimed means for generating communication signals at a first location for transmission on a powerline, which is met by transmitter **16**, **24** useful in the power-line communication for data signals over long distances (col. 14 lines 18-41), 2)the claimed means for reactively coupling the communication signals to the powerline, which is met by the transmitter means generally comprises a driver **62** which is connected to the coupling means **14**, **22** (col. 14 lines 18-41), and 3)the claimed means for receiving the communication signals at a second location, which is met by each house **119** receiving electric power via modem **121** and air coil transmitter and receiver coupler circuit **123** in accordance with the present invention coupled to the electricity meter **125** (col. 15 lines 60-67 and col. 16 lines 1-19). Although Abraham does not disclose the claimed coupling the

communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

In reference to claim 39, Abraham discloses the claimed means for generating includes a first communications device, which is met by transmitter **16, 24** useful in the power-line communication of data signals over long distances (col. 14 lines 19-41).

In reference to claim 40, Abraham discloses the claimed a means for reactively coupling includes means for inductively coupling the communication signals to the powerline, which is met by magnetic coil **64** (col. 14 lines 18-29).

In reference to claims 41, 43, 45, Abraham discloses the claimed means for inductively coupling includes a communications core element disposed about the powerline and a plurality of windings disposed about the communications core element for coupling the communication signals to the powerline, which is met by the phase shift linear transformer of the present invention involves a dielectric core coupler which uses a dielectric core coupler which uses a dielectric material disposed between the primary and secondary windings (col. 8 lines 46-61).

In reference to claim 42, Abraham discloses the claimed means for reactively coupling includes an inductor, which is met by coupling **14, 22** include a pair of serial LC circuits in which novel air-core transformers for both transmission and reception which serve as the inductive (L) component of the respective LC circuits (col. 7 lines 1-14).

In reference to claim 44, Abraham discloses the claimed means for receiving includes a means reactively coupling includes means for inductively coupling the signals to and from the powerline, which is met by coupling **14, 22** include a pair of serial LC circuits in which novel air-core transformers for both transmission and reception which serve as the inductive (L) component of the respective LC circuits (col. 7 lines 1-14).

In reference to claim 46, Abraham discloses the claimed means for extracting from the powerline the communication signals transmitted from the second location, which is met by the

central computer **139** issuing an addressable command which is transmitted via a master modem **141** and coupler **137** to the substation over power or conventional phone lines **138**, the command is transmitted through the home couplers **123** and modem **121**, the meter reading is recorded, transmitted by the home modem **121** through couplers **123**, through distribution transformer **126**, over power line **129,** the couplings include a pair of serial LC circuits in which novel air-core transformers for both transmission and reception which serve as the inductive (L) component of the respective LC circuits (col. 16 lines 21-47, and col. 7 lines 1-14).

In reference to claims 47, 48, Abraham discloses the claimed means for extracting includes the means for reactively coupling from the powerline the communication signals transmitted from the second location, which is met by a meter reading is recorded, transmitted by the home modem **121** through couplers **123**, through distribution transformer **126**, over powerline **129** to the appropriate substation coupler **135** (col. 16 lines 32-47).

In reference to claim 49, Abraham discloses the claimed means for inductively coupling includes a communications core element disposed about the powerline and a plurality of windings disposed about the communications core element, which is met by the phase shift linear transformer of the present invention involves a dielectric core coupler which uses a dielectric core coupler which uses a dielectric material disposed between the primary and secondary windings (col. 8 lines 46-61).

In reference to claim 50, Abraham discloses the claimed means for encoding the communication signals, which is met by central computer **139** which will issue an addressable command which is transmitted via a master modem **141** (col. 16 lines 33-47).

In reference to claim 51, Abraham discloses the claimed means for inductively coupling further including driver means for providing low voltage, high current pulses of the communication signals to the plurality of windings to inductively couple the pulses to the powerline, which is met by providing power line communications in which the aircore in the coupling transformer gives negligible pulse dispersion, the air coil comprising of a primary winding **38** and a smaller secondary winding **40** , the current is maximized by creating a band pass filter at the carrier frequency FA, and the coupling means **14, 22** are suitable for communication in association with wide range of power-line voltages which can be used for utilizing high and low voltage through power line transformers (col. 4 lines 16-24, col. 10 lines 1-11, and col. 11 lines 62-67).

In reference to claim 52, Abraham discloses the claimed storage device proximate the first location, which is met by when the utility desires to make a meter reading, the central computer **139** will issue an addressable command which is transmitted via a master modem **141** and coupler **137** (col. 16 lines 33-47).

In reference to claim 53, Abraham discloses the claimed means for transmitting the communications signals to the storage device, which is met by substation **131** and computer **139** will communicate over the power or phone line (col. 16 lines 20-32).

In reference to claim 54, Abraham discloses 1)the claimed means for generating communication signals for transmission on a powerline, which is met by transmitter **16**, **24** useful in the power-line communication for data signals over long distances (col. 14 lines 18-41), and 2)the claimed means for reactively coupling the communication signals to the powerline, which is met by the transmitter means generally comprises a driver **62** which is connected to the coupling means **14**, **22** (col. 14 lines 18-41). Although Abraham does not disclose the claimed coupling the communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

In reference to claim 55, Abraham discloses 1)the claimed means for receiving the communication signals transmitted over the powerline, which is met by which is met by each house **119** receiving electric power via modem **121** and air coil transmitter and receiver coupler circuit **123** in accordance with the present invention coupled to the electricity meter **125** (col. 15 lines 60-67 and col. 16 lines 1-19), and 2)the claimed a means for reactively coupling the communication signals to the receiver, which is met by the command is transmitted through the home couplers **123** and modem **121** (col. 16 lines 32-47). Although Abraham does not disclose the claimed coupling the communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

In reference to claim 56, Abraham discloses 1)the claimed sensor for sensing a condition of a powerline, which is met by local substation **131** (FIG. 22), 2)the claimed base station remote from the sensor, which is met by house **119** receiving electric power from utility having a modem **121** (col. 16 lines 3-19), 3)the claimed means for reactively coupling a signal from the sensor onto the powerline for transmission on the remote base station, which is met by receiver coupler circuit **123** coupled to the electricity meter **125** (col. 16 lines 3-19 and FIG. 22), and 4)the claimed means for reactively coupling the signal transmitted on the powerline from he powerline to the remote base station, reactively coupling a signal generated by the base station onto the powerline, and reactively coupling the signal on the powerline from the base station to the sensor, which is met by a meter reading is recorded, transmitted by the home modem **121** through couplers **123**, through distribution transformer **126**, over powerline **129** to the appropriate substation coupler **135** (col. 16 lines 32-47). Although Abraham does not disclose the claimed coupling the communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the

powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

In reference to claim 57, Abraham discloses 1)the claimed plurality of modular core elements for disposing about an a.c. powerline, which is met by first and second coupling means **14** and **22** (FIG 6), 2)the claimed winding layer to be energized by the a.c. powerline, including a plurality of windings disposed about each of the modular core element, wherein the windings of each of the modular core elements are interconnected and means for sensing a condition in or about the a.c. powerline, which is met by a primary winding **38** and a smaller secondary winding **40** situated coaxially within the primary winding (col. 8 lines 23-29), and 3)the claimed controller means, powered by the windings and responsive to the means for sensing, for receiving a signal indicative of the condition sensed, which is met by coupling capacitor network, which is set to resonate with the primary winding at the carrier frequency FA, creating a band pass filter and maximizing the current (col. 9 lines 51-67), each house **119** receiving electric power via modem **121** and air coil transmitter and receiver coupler circuit **123** in accordance with the present invention coupled to the electricity meter **125** (col. 15 lines 60-67 and col. 16 lines 1-19). Although Abraham does not disclose the claimed coupling the communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading

effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

In reference to claims 58, 65, and 66, although Abraham does not disclose the claimed modular core elements are formed of highly permeable ferromagnetic material, low magnetic permeability, or a material of foam, he does disclose that the air-gap is filled with resin which insulates the AC current from the transceiver coupling means **14, 22** is of a magnetic coil **64** (col. 2 lines 16-28 and col. 14 lines 19-31). Since Abraham discloses air-core windings with a magnetic coil, it would have been obvious to one skilled in the art to use highly permeable ferromagnetic material around the core to allow the magnetic signals to transfer through the housing of the core elements and transmit the signals to and from the powerline.

In reference to claim 59, Abraham discloses the claimed windings of each of the modular core elements are interconnected electrically in series or in parallel, which is met by the primary

winding **46** of the second air coil **44** thereafter being serially connected to the other power line **12** (col. 8 lines 30-42).

In reference to claims 60 and 64, although Abraham does not disclose the claimed plurality of windings are energized by non-contacting transformer action with the a.c. powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

In reference to claims 61 and 62, Abraham discloses the claimed sensing a condition including means for sensing voltage and current of the a.c. powerline, which is met by LC circuits include respective serially and parallel connected capacitor networks **34, 42**, each capacitor in

series which evenly divides down the AC voltage, the user of the resistors **35, 45** serve to minimize the DC current (col. 8 lines 1-15).

In reference to clam 63, Abraham discloses the claimed means for reactively coupling includes an inductor, which is met by coupling **14, 22** include a pair of serial LC circuits in which novel air-core transformers for both transmission and reception which serve as the inductive (L) component of the respective LC circuits (col. 7 lines 1-14).

In reference to claim 67, Abraham discloses the claimed means reactively coupling a communications core element disposed about the powerline and a plurality of windings disposed about the communications core element for coupling the signal to the a.c. powerline, which is met by the phase shift linear transformer of the present invention involves a dielectric core coupler which uses a dielectric core coupler which uses a dielectric material disposed between the primary and secondary windings (col. 8 lines 46-61). Although Abraham does not disclose the claimed coupling the communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36). Since both Abraham and Libove

disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

ARGUMENTS

The applicant argues that Abraham does not disclose a non-invasive means for reactively coupling the communication signals to the powerline without tapping the powerline.

RESPONSE

Under the new rejection, it is noted that Abraham does not disclose the claimed non-invasive means for reactively coupling the communication signals to the powerline without tapping the powerline. However, although Abraham does not disclose the claimed coupling the communication signals to the powerline without tapping the powerline, he does disclose that the coupling device comprises air-coils with inductances **L1** and **L2** which are inductively and capacitively coupled creating an air-core transformer and insulate the AC current, the air-gap is selected to reduce inductive loading effects from coupler secondary to the primary (col. 2 lines 16-43). Libove (cited prior art by the applicant) discloses a coupling device which uses contactless measurements of voltage, current, power, and power factor (col. 12 lines 21-36).

Since both Abraham and Libove disclose coupling devices used to measure the voltage, current, and power or a powerline, it would have been obvious to one skilled in the art to incorporate a non-contact means for not tapping the powerline, as disclosed by Libove, with the system of Abraham, to ensure that the powerline won't be damaged and allow the decrease the danger for an operator to gain access to the device.

The test for obviousness is not whether the features of the reference may be bodily incorporated into the other to produce the claimed subject matter but simply what the references make obvious to one of ordinary skill in the art. In Re Bozek, 163 USPQ 545, (CCPA 1969); In re Richman 165 USPQ 509, (CCPA 1970); In re Beckum, 169 USPQ 47 (CCPA 1971), In re Sneed 710 F.2d 1544, 218 USPQ 385.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure as follows. Ward (US Pat. 4,350,980) which discloses telecommunication over powerlines.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davetta C. Woods whose telephone number is (703)306-2761 and fax number is (703)308-9051).

If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor Jeff Hofsass can be reached at (703)305-4717.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703)305-8576.

D. W. Goins

November 2, 1999

JEFFREY A. HOFSASS
SUPERVISORY PATENT EXAMINER
GROUP 2700